Breast Self-Examination Competency: An Analysis of Self-Reported Practice And Associated Characteristics

DAVID D. CELENTANO, ScD, AND DEBORAH HOLTZMAN, MS

Abstract: Of 308 Baltimore, Maryland women surveyed by telephone, 76.3 per cent reported having performed breast self-examination (BSE) during the last year, with only 35 per cent reporting monthly BSE. Four BSE ability scores showed that most women had little knowledge of the proper BSE technique. Utilization factors, socioeconomic status, and knowledge/attitude about cancer were not related to BSE competency. Higher BSE competency scores were related to performing BSE at the recommended interval, having been taught the procedure by a health professional, and perceived confidence in BSE practice were also related to proper performance. (*Am J Public Health* 1983; 73:1321–1323.)

Over the past decade breast self-examination (BSE) has been widely recommended for many women.[1,2] This report describes a scoring system for establishing the proficiency of women in performing BSE and relates it to self-reported BSE frequency, BSE teaching, medical care utilization factors, and social-demographic characteristics. Verbal reports of how BSE behavior is performed is one method of validating self-reported BSE practice. While some argue that only direct observation allows for a systematic assessment of validating practice, it is argued here that self-reports constitute a useful method of validation.[3]

Methods

The study population consisted of adult women in one area in Baltimore, Maryland, with a population of approximately 75,000 persons, 40 per cent Black, and containing a wide diversity of economic groups, including a large poverty population and an affluent suburb.*

Telephone interviews were conducted with 308 randomly sampled women over the age of 18 years. Completed interviews were obtained from 78 per cent of eligible households (Table 1). The interviews, lasting approximately 25 minutes, were conducted by trained female interviewers with experience in conducting telephone surveys on cancer control issues.[5] Information was collected on history and practice of BSE; how and from whom BSE was learned; perceived confidence in performing BSE; and a description of the specific procedures or steps used in doing BSE.

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*The area was selected for investigation based on the results of a 10-year mortality study[4] which found significantly elevated mortality rates among non-Whites for all malignant neoplasms combined as well as for several distinct sites, including breast, uterine cervix, and lung among non-White females.

The scoring system for determining BSE competency consisted of five summed scales, each of which is a count of the steps which should be included in properly performing the procedure (Appendix I).

The specific items were not read to respondents; rather, they volunteered the information in response to an open-ended question (with probes) asking them to describe how they did BSE. One coder scored all of the interviews to ensure consistency in scoring, and the respondent scores were compared across interviewers to assure reliability in data collection procedures (no systematic differences were detected).

Results

Seventy-six per cent of the women reported that they had "ever" performed BSE. Table 2 shows the association between social-demographic risk factors identified in the literature to "ever" performing BSE and to reported "monthly" BSE. Older age is associated with less frequent BSE performance. Blacks reported performing BSE monthly more commonly than whites, a finding which held when age and income were simultaneously considered. More affluent women reported more frequent BSE performance;

TABLE 1—Selected Characteristics of the Study Population

Characteristic	n	Percentage Distribution
Age		
Under 45 years	118	38.3
45–64 years	118	38.3
65 and over	72	23.4
Race		
White	176	57.1
Black	132	42.9
Marital Status		
Never Married	48	15.6
Ever Married	260	84.4
Educational Attainment		
Grade School (8th grade)	41	13.3
Some High School	51	16.6
High School Graduate	111	36.0
Some College	57	18.5
College Graduate	48	15.6
Annual Family Income		
Under $5,000	43	14.0
$5–$9,999	50	16.2
$10–$14,999	111	36.0
$15–$19,999	28	9.1
$20–$29,999	63	20.5
$30,000 and over	31	10.1
Not stated	46	14.9
Employment Status		
Currently Employed	167	54.2
Not Currently Employed	141	45.8
Source of Medical Care		
Private Physician	196	63.6
Hospital	59	19.1
Health Department Clinic	32	10.4
Other	21	6.8

TABLE 2—Prevalence of "Ever" Performing BSE and Monthly BSE by Social-Demographic Factors

Factor	N	% Ever Perform BSE	% Perform Monthly BSE
Age			
Under 65 Years	236	84.7	39.4
65 Years and Over	72	48.6**	22.2**
Race			
White	176	71.5	27.3
Black	132	82.6**	46.2**
Education			
≤12 Grades	203	70.4	34.5
≥Some College	105	87.6**	37.1
Employment Status			
Employed	167	84.4	37.7
Not Employed	141	66.7**	32.6
Annual Family Income			
<$15,000	140	67.1	29.3
≥$15,000	122	90.2**	37.3*
Marital Status			
Never Married	48	75.0	25.0
Ever Married	260	76.5	37.3

*p < .01 based on chi square test.
**p < .005 based on chi square test.

TABLE 3—BSE Instruction Factors and BSE Frequency

BSE Instruction Factor	N	% Reporting Monthly BSE
Received Instruction		
No	87	37.9
Yes	148	51.4*
Demonstrated Proficiency		
No	80	42.5
Yes	70	55.3*
Time to do BSE		
Under 2 minutes	82	42.7
2 minutes or more	149	49.7
Confidence in BSE Ability		
Not Very Confident	57	29.8
Somewhat Confident	107	46.7
Very Confident	68	60.3**

*p < .05 based on chi square test.
**p < .01 based on chi square test.

no differences were found by marital status even when controlling for race. Only one-third (35.4 per cent) of women reported performing BSE at least monthly, the recommended interval.

Of the women who reported that they had performed BSE during the past 12 months, 63 per cent reported that they received instruction in BSE from a health professional (most commonly a physician). Table 3 shows that instruction was related to more frequent BSE, as was being asked to demonstrate proficiency to the instructor. Women who routinely performed BSE were no more likely to spend sufficient time doing BSE than women who did BSE less frequently. There is a direct association between self-reported BSE frequency and perceived confidence in ability to do BSE correctly, although confidence was unrelated either to having received instruction or to the amount of time spent performing BSE.

Table 4 shows the four BSE ability scores and the overall measure of "competency". There is considerable variability in the scores, but it is apparent that knowledge of the procedures necessary to correctly perform BSE was not high in this group of women.

The BSE position scores also varied. Women were most likely to be knowledgable of the "lying down" procedure, but only infrequently mentioned the steps for the "mirror" technique. For the reliability of the composite, subscale-to-total correlations ranged from 0.36 to 0.74, with the "mirror" score having the lower correlations. A detailed analysis (available from the authors) showed that women who were aware of the "lying down" procedure rarely were aware of the "upright" position (and vice versa) even when given the probe, "Is there any other way you do it?"

BSE performance at the recommended interval (monthly) is associated with higher BSE scores, as is higher perceived confidence in BSE ability. Reporting having been taught BSE by a health professional was also related to more competent BSE, but not having been asked to demonstrate that proficiency to the instructor or time spent performing BSE.

While age and race were significant predictors of the frequency of BSE performance, neither were associated with BSE ability. When dichotomized at the median (four

TABLE 4—BSE Performance and Instruction as Related to BSE Competency

BSE Factor	N	BSE Competency Scores				
		Lying Down	Standing Up	Mirror	Sophistication	Competency
Frequency of BSE						
Monthly	109	2.19	1.02*	0.15	1.30	4.59**
Less than Monthly	121	1.79	0.65	0.13	1.17	3.75
BSE Instruction						
No	87	1.28	1.01	0.21	1.09	3.57
Yes	148	2.32**	0.76	0.09	1.32**	4.50**
Demonstrated BSE						
No	82	2.16	0.80	0.09	1.29	4.34
Yes	70	2.54	0.66	0.10	1.36	4.66
Time to do BSE						
<2 Minutes	84	1.53	1.14*	0.17	1.17	4.00
>2 Minutes	150	2.14**	0.68	0.12	1.27	4.21
Confidence in BSE						
Not Very	57	1.56	0.72	0.12	0.98	3.39
Somewhat, Very	175	2.07*	0.91	0.14	1.34**	4.46**
Mean Score	235	1.93	0.85	0.14	1.24	4.16

*p < .05; **p < .01 based on t-tests with separate variance estimates, two-tailed probabilities.

correct steps), higher competence was significantly associated with younger age (46 years vs 54 years). Socioeconomic status—measured by educational attainment, occupational status, or total family income—was unrelated to BSE competence, contrary to the hypothesized prediction based on verbal ability. Medical care utilization factors (number and types of visits, obstetrician-gynecology visits, having a personal physician and receiving breast palpation from a health provider) and knowledge of the cancer warning signs, smoking status, history of mammography, and perceived susceptibility to breast cancer were all unrelated to BSE competence.** However, experience with other types of cancer preventive tests and/or examinations was significantly associated with higher ability scores.

Discussion

These data suggest that while many women perceive that the procedures they follow in performing BSE are correct, most women are not correctly performing the BSE technique, leaving out some or most of the critical steps. While the scoring procedure here equally weights each of the various steps (thereby implying equivalence in their importance for detecting a breast abnormality), we did not find that various weighting schemes altered the basic findings. This analysis also shows that many women who report doing BSE may be performing the technique too quickly to accurately detect a breast abnormality if present or to notice the various subtle changes in the breast which might be occurring over time. Finally, women who lack confidence in their ability to perform BSE correctly or who have not been instructed on how to do BSE appeared to perform BSE less frequently and to have less competence in performing the technique. The implications for future studies of BSE are obvious.

REFERENCES

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APPENDIX I
Criteria for Breast Self-Examination Measures

Indicators	Criteria
Lying Down Position	1. Hand behind (Over) head; prop under shoulder
	2. Opposite hand
	3. Fingers flat/finger tips
	4. Small (circular) motions; outward-inward; all around
	5. Check nipple; nipple discharge
	6. Include armpit area; underarm
Upright position	1. Two or three fingers; fingers flat
	2. Opposite hand; arm up
	3. Circular motion; outward-inward; all over
	4. Breast changes; soreness
	5. Include armpit area; underarm
	6. Check nipple
Mirror Technique	1. Arms at side
	2. Raise arms overhead
	3. Look, including nipple, for abnormality, dimpling, discoloration, swelling
	4. Press palms on hips, flex chest muscles
Sophistication	1. Fingers flat
	2. Armpit (underarm) mentioned
	3. Nipple changes and/or discharge

All four indicators were summed such that each criterion was equally weighted; the overall score for "competency" was composed of the sum of the three position scores and the "sophistication" score, yielding a sum from 0–19. These indicators are a modification of a BSE measure developed by the National Cancer Institute for the 1979 national probability survey of women[6] and incorporate NCI and American Cancer Society recommendations on the "correct" technique for BSE. The NCI "thoroughness" score is a sum of six steps; this measure is considered to be problematic, for there is a confusion between positions and recommended procedures. The measures developed here are more restrictive. Our measures are a modified version of those developed by Drs. Joyce Mamon and Jane Zapka who conducted a validation of BSE measures under contract N01-CN-95439 from the National Cancer Institute. ***

**Data available on request to author.

*** Mamon, J and Zapka, J; Determining validity of measuring the quality of breast self-examination: Comparison of written questionnaire with demonstration. Presented at the APHA Annual Meeting in Montreal, Canada, November 1982.